

Patent claims

1. An energy consumption meter arrangement, having
  - a first input (1) for feeding a signal derived from a voltage (V), to which first input (1) a first analog-to-digital converter (3) is connected,
  - a second input (2) for feeding a signal derived from a current (I), to which second input (2) a second analog-to-digital converter (4) is connected,
  - a multiplier (7), which combines the outputs of the two analog-to-digital converters (3, 4) with one another,
  - a phase evaluation block (9) having two inputs, which are coupled to the first and the second input (1, 2) of the energy consumption meter arrangement for the purpose of measuring a phase difference ( $\Delta\phi$ ), and having an output, which is coupled to a phase correction block (6), and
  - the phase correction block (6), which is coupled to an output of one of the two analog-to-digital converters (4), designed for correcting the phase difference ( $\Delta\phi$ ) of the digitized signal derived from a current (I) or a voltage (V).
- 25 2. The energy consumption meter arrangement as claimed in claim 1,  
characterized in that  
the phase evaluation block (9) comprises means for permanently storing a phase correction value (17).
- 30 3. The energy consumption meter arrangement as claimed in claim 1 or 2,  
characterized in that  
in each case one limiting amplifier (10, 11) is provided  
35 which couples in each case one input of the energy consumption meter arrangement (1, 2) to in each case one

4. The energy consumption meter arrangement as claimed in one of claims 1 to 3,  
characterized in that
- 5 the first and the second analog-to-digital converters (3,  
4) are each in the form of sigma-delta converters.
- 10 5. The energy consumption meter arrangement as claimed in one of claims 1 to 4,  
characterized in that  
an integrator (8) is provided which is connected downstream of the multiplier (7).
- 15 6. The energy consumption meter arrangement as claimed in one of claims 1 to 5,  
characterized in that  
the first and the second analog-to-digital converters (3,  
4), the phase correction block (6) and the phase evaluation block (9) are designed using integrated circuit technology.
- 20 7. The energy consumption meter arrangement as claimed in one of claims 1 to 6,  
characterized in that  
a nonconductively coupling transfer arrangement (14) is connected to the first input (1) and/or to the second input (2) for the purpose of coupling-in the signal derived from a voltage (V) and/or from a current (I).
- 30 8. The energy consumption meter arrangement as claimed in claim 7,  
characterized in that  
the nonconductively coupling transfer arrangement (14) is in the form of a transformer.
- 35 9. The energy consumption meter arrangement as claimed in one of claims 1 to 8,

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a means for generating a test signal (16) is provided which is coupled to the first and the second input (1, 2) of the energy consumption meter arrangement.